

US009369584B2

(12) **United States Patent**
Sylvain

(10) **Patent No.:** **US 9,369,584 B2**
(45) **Date of Patent:** ***Jun. 14, 2016**

(54) **CALL SERVER SELECTION**

(71) Applicant: **Rockstar Consortium US LP**, Plano, TX (US)
(72) Inventor: **Dany Sylvain**, Gatineau (CA)
(73) Assignee: **RPX CLEARINGHOUSE**, San Francisco, CA (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 146 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/340,916**

(22) Filed: **Jul. 25, 2014**

(65) **Prior Publication Data**
US 2014/0334483 A1 Nov. 13, 2014

Related U.S. Application Data
(63) Continuation of application No. 11/615,294, filed on Dec. 22, 2006, now Pat. No. 8,792,625.

(51) **Int. Cl.**
H04M 1/64 (2006.01)
H04M 7/00 (2006.01)
H04L 29/06 (2006.01)
H04M 7/12 (2006.01)

(52) **U.S. Cl.**
CPC *H04M 7/003* (2013.01); *H04L 65/80* (2013.01); *H04M 7/006* (2013.01); *H04M 7/1285* (2013.01); *H04M 7/0006* (2013.01); *H04M 2203/2066* (2013.01)

(58) **Field of Classification Search**
CPC ... H04M 7/003; H04M 7/006; H04M 7/1285; H04M 7/0006; H04M 2203/2066; H04L 65/80
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,028,921	A	2/2000	Malik et al.
6,310,941	B1	10/2001	Crutcher et al.
6,611,589	B1	8/2003	Yang
6,882,640	B1	4/2005	Berger et al.
7,400,881	B2	7/2008	Kallio
7,764,778	B2	7/2010	Allen et al.
2001/0050911	A1	12/2001	Eastman
2002/0126819	A1	9/2002	Case et al.

(Continued)

FOREIGN PATENT DOCUMENTS

EP 1093282 A2 4/2001

OTHER PUBLICATIONS

U.S. Appl. No. 11/316,431, filed Dec. 22, 2005, 32 pages.

(Continued)

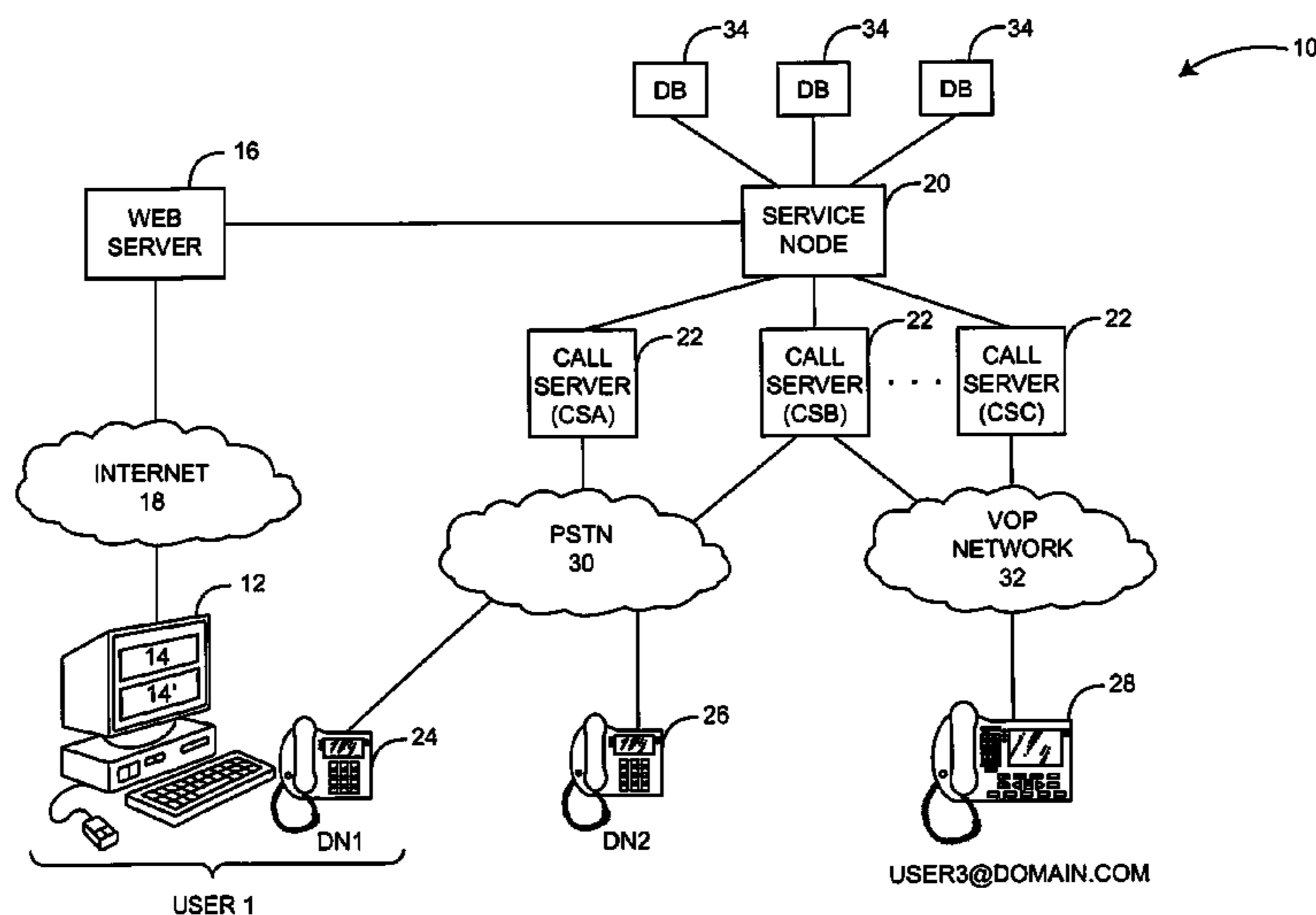
Primary Examiner — Oleg Asanbayev

(74) *Attorney, Agent, or Firm* — Withrow & Terranova, PLLC

(57) **ABSTRACT**

In a click-to-call communication environment, the present invention is employed to select an appropriate call server to use when establishing a call between two endpoints. A computing terminal provides a request to initiate a call between the two endpoints. The request is passed to a service node directly or through any number of intermediate nodes, such as a web server. The request may identify a source and a destination for the call. The service node will select a call server to use for establishing the call between the two endpoints based on the destination for the call, and send instructions to the call server to initiate the call. In response, the call server will initiate the call between the two endpoints.

22 Claims, 11 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2002/0176404 A1 11/2002 Girard
2005/0021761 A1 1/2005 Thomas
2009/0316687 A1 12/2009 Kruppa

OTHER PUBLICATIONS

European Search Report for European Patent Application No. 07024920.6, issued Nov. 10, 2009, 7 pages.
Non-Final Office Action for U.S. Appl. No. 11/615,294, mailed Sep. 29, 2010, 11 pages.

Final Office Action for U.S. Appl. No. 11/615,294, mailed Jan. 19, 2011, 14 pages.
Non-Final Office Action for U.S. Appl. No. 11/615,294, mailed Jun. 22, 2011, 11 pages.
Non-Final Office Action for U.S. Appl. No. 11/615,294, mailed Dec. 8, 2011, 11 pages.
Final Office Action for U.S. Appl. No. 11/615,294, mailed Apr. 11, 2012, 13 pages.
Examiner-Initiated Interview Summary for U.S. Appl. No. 11/615,294, mailed Nov. 13, 2012, 2 pages.
Non-Final Office Action for U.S. Appl. No. 11/615,294, mailed Nov. 4, 2013, 15 pages.
Notice of Allowance and Examiner-Initiated Interview Summary for U.S. Appl. No. 11/615,294, mailed Mar. 21, 2014, 18 pages.

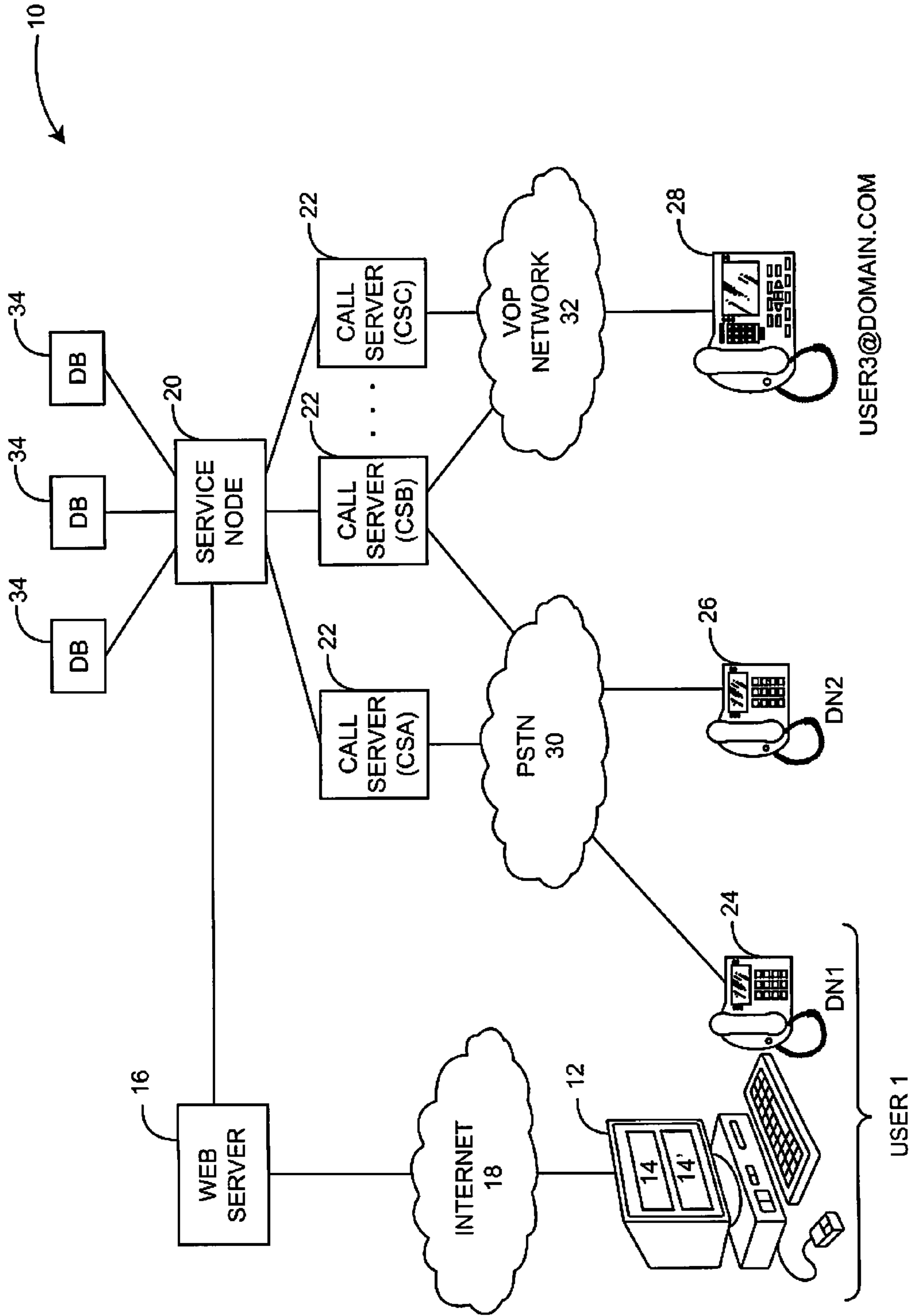


FIG. 1

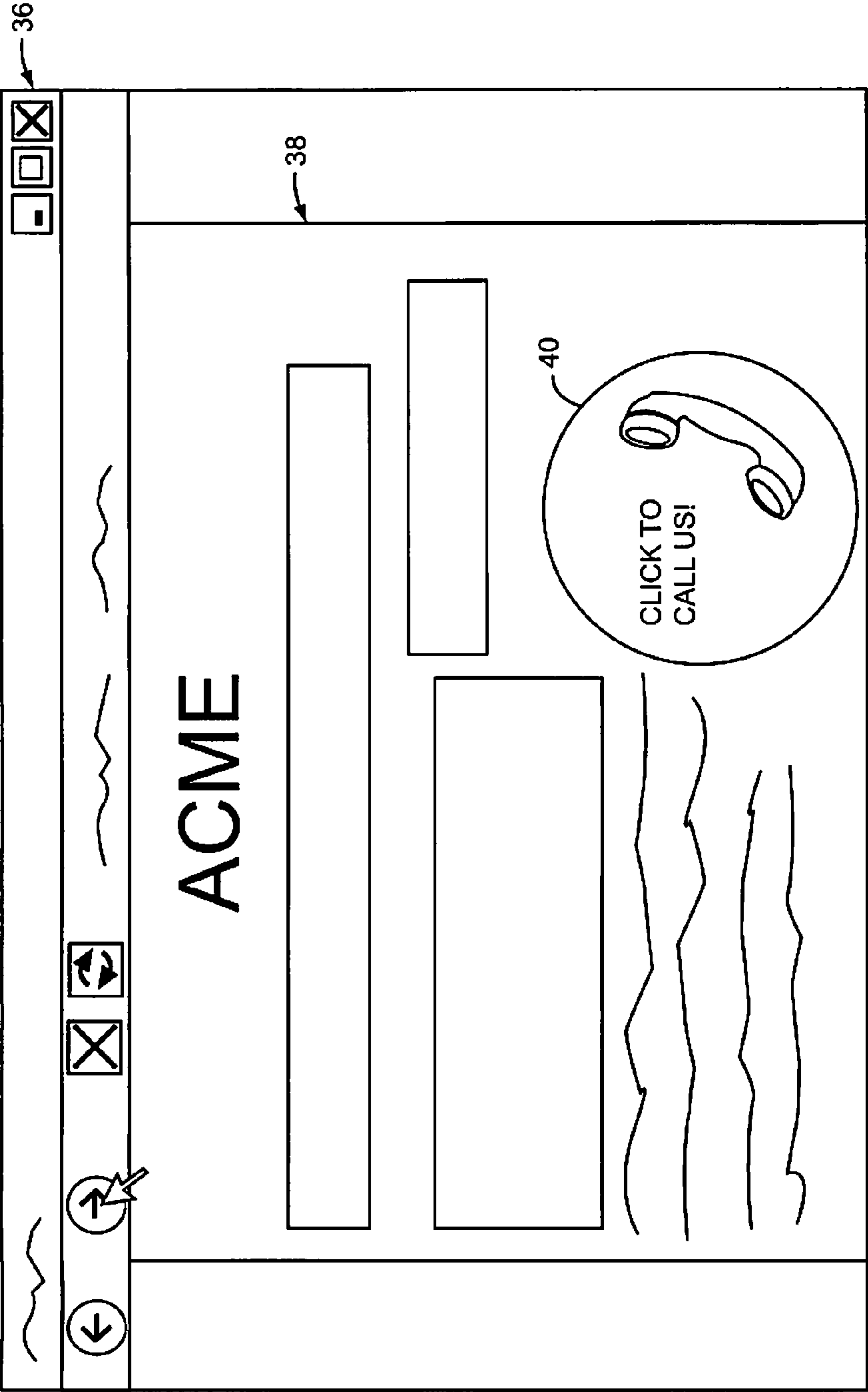


FIG. 2

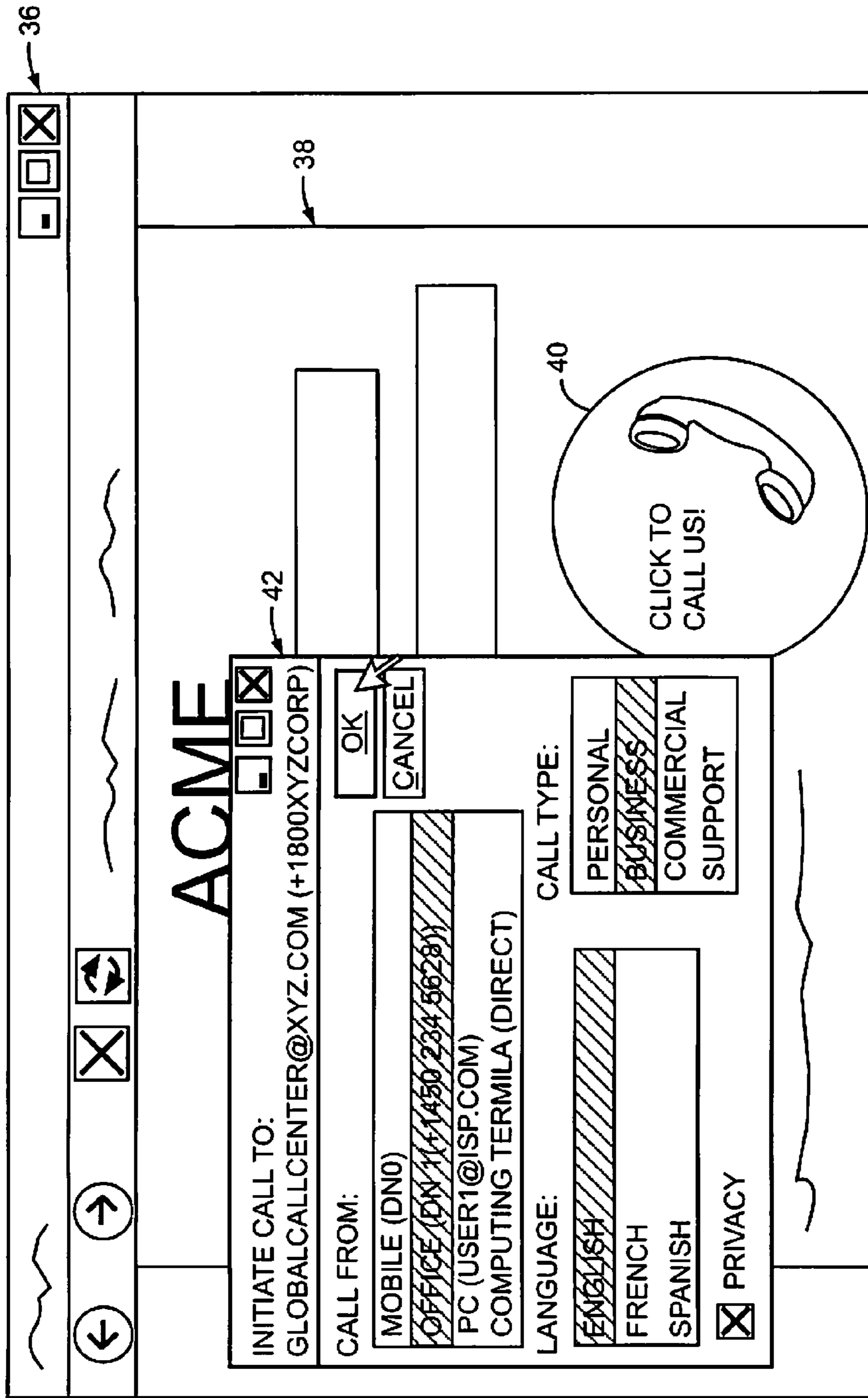


FIG. 3

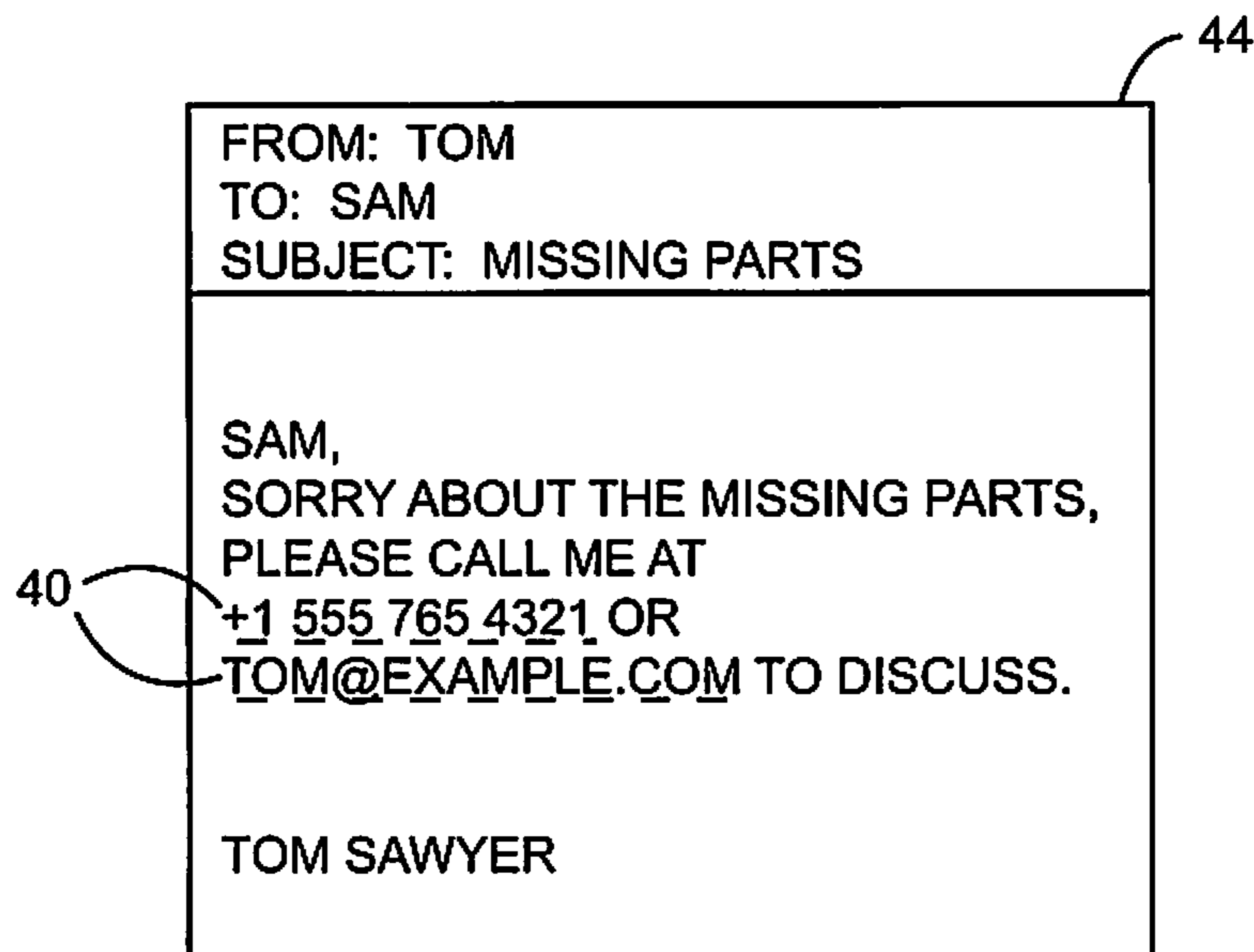


FIG. 4

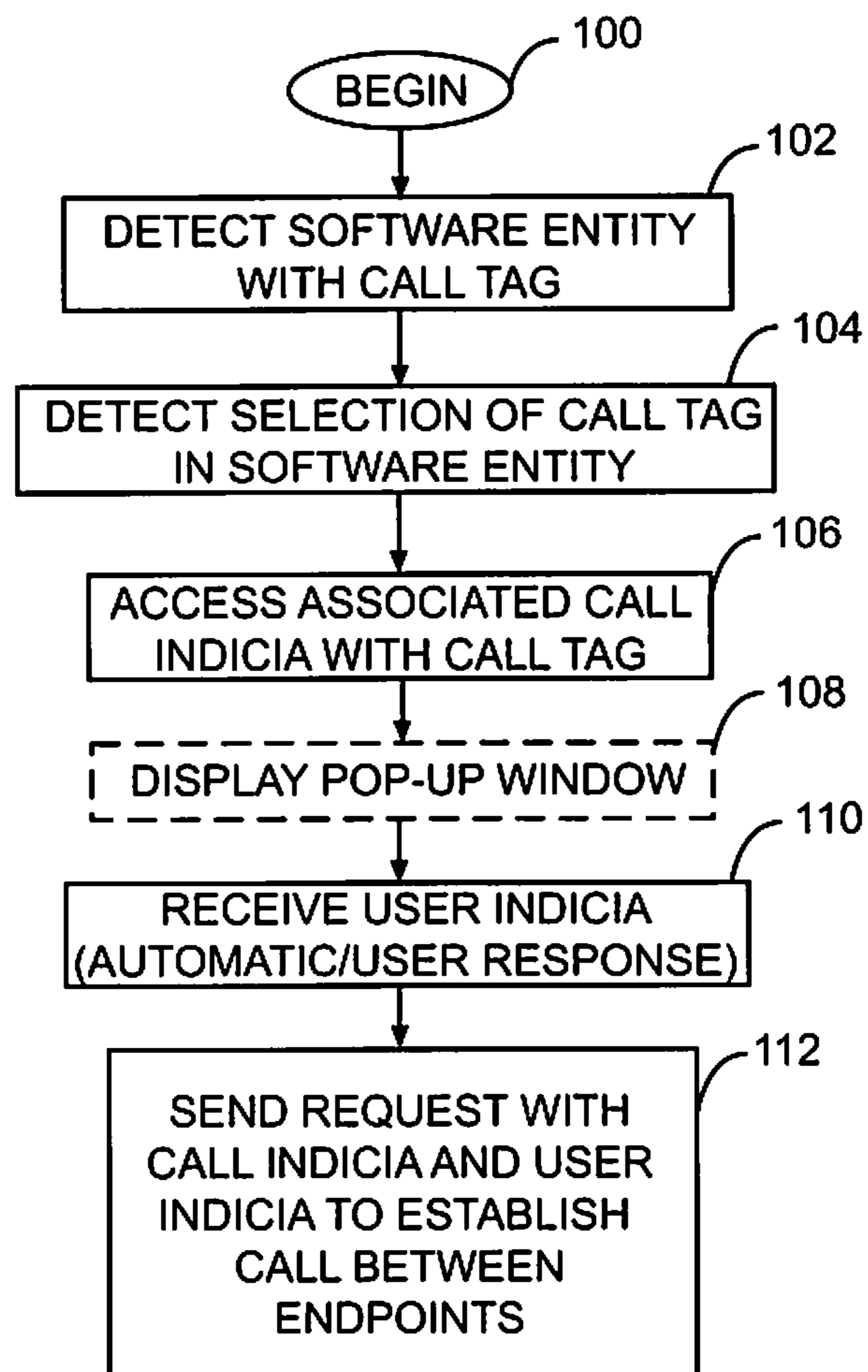


FIG. 5

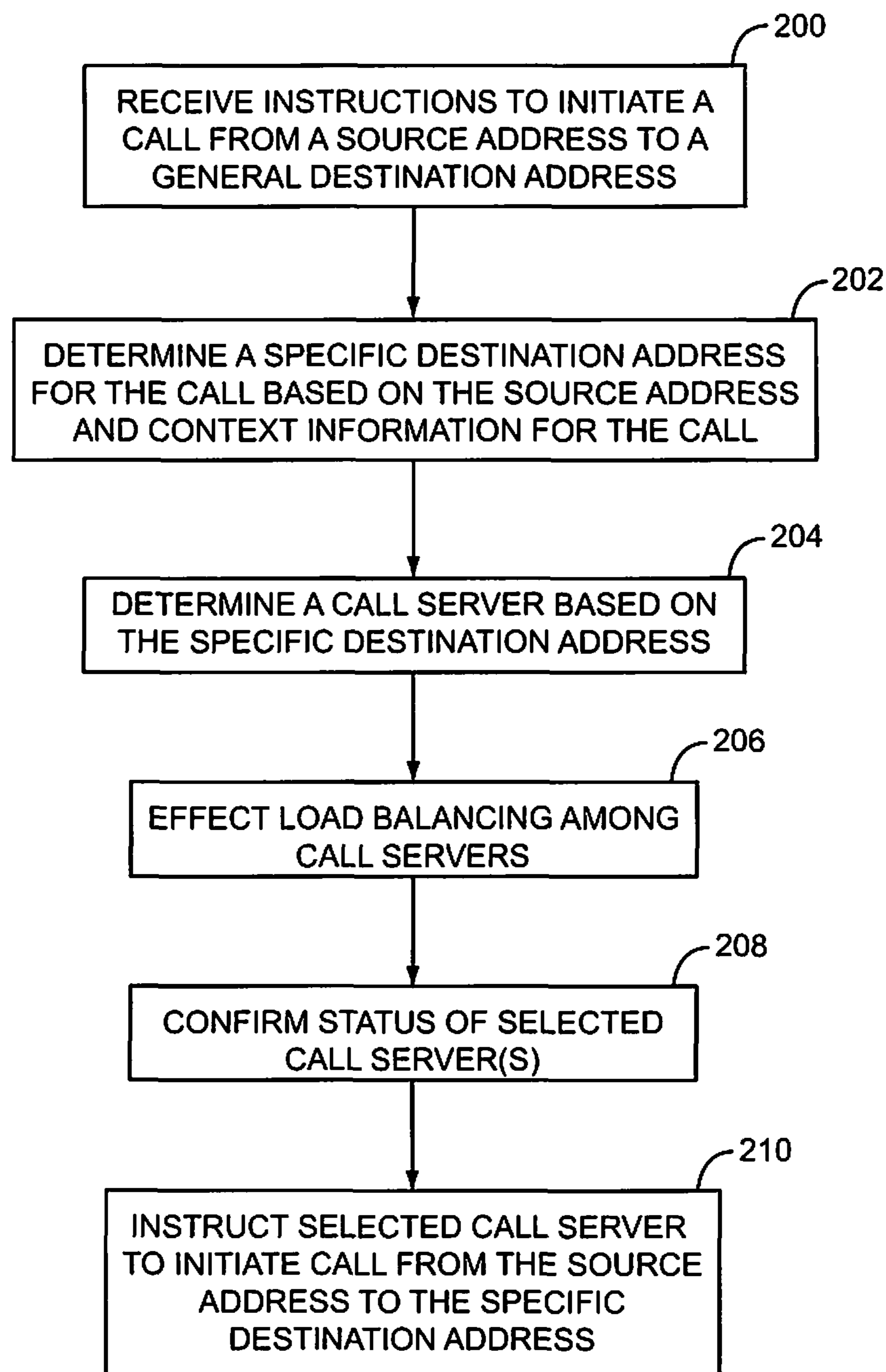


FIG. 6

GENERAL DESTINATION: XYZ.COM OR 800-XYZ-CORP		
SOURCE INFO.	CONTEXT INFO.	SPECIFIC DESTINATION ADDRESS
+1 *	ENGLISH	+1(416) 583-7382
+1 *	FRENCH	+1(514) 373-2891
+33 *	*	+33 05 12 23 42 23
+ 2...32 *	*	+44 09 12 22 42 84
+23 * ⋮ SIP: *	RESERVATION ⋮ *	+23 39 39 40 38 10 ⋮ SIP:CALLCENTER@XYZ.COM

* WILDCARD

FIG. 7

CALL SERVER SELECTION TABLE	
DESTINATION INFO.	CALL SERVER
+1(416) *	CSA, CSC
+1(514) *	CSB
+33 *	CSB
+44 *	CSC
⋮	⋮
SIP: *	CSZ

* WILDCARD

FIG. 8

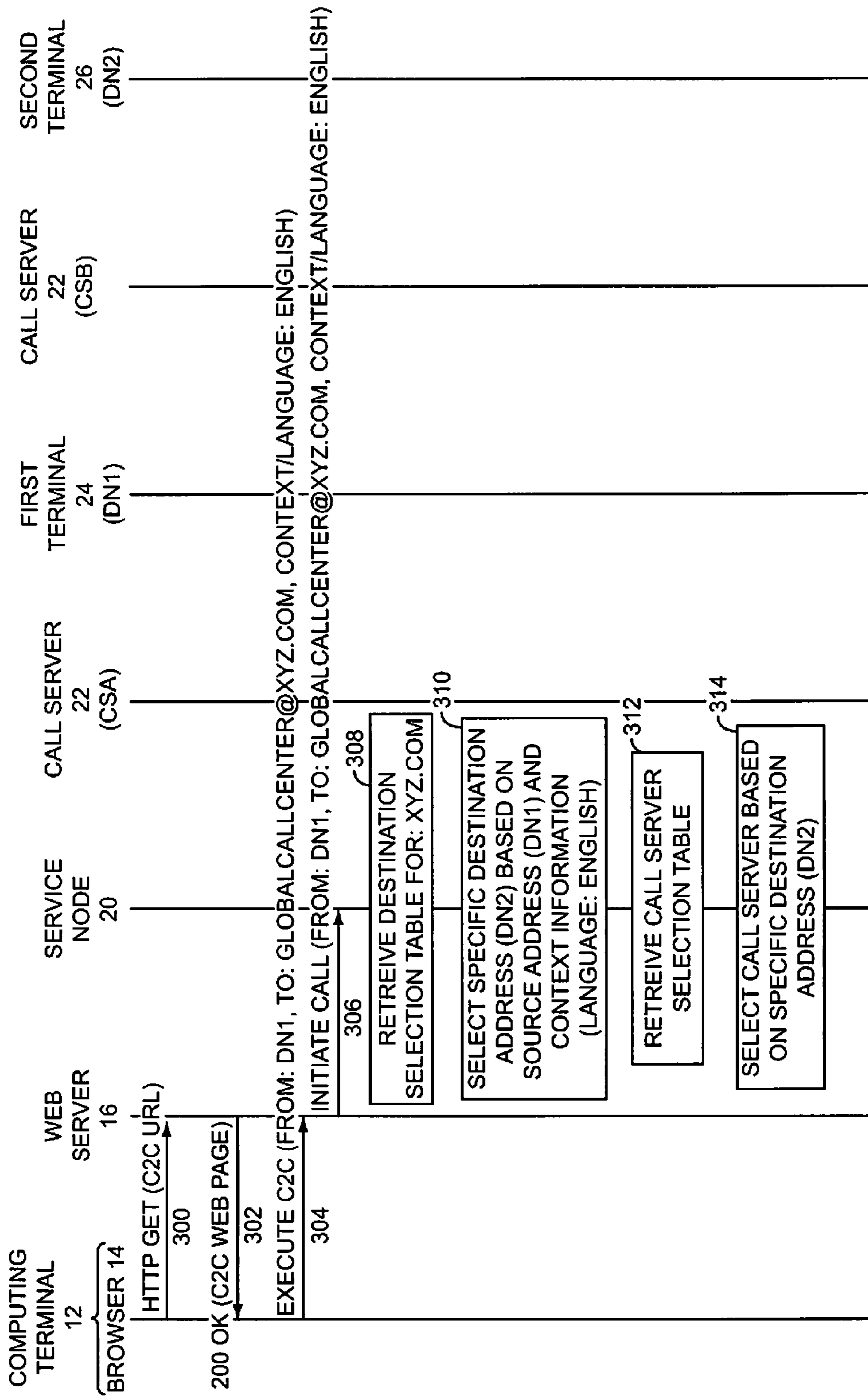


FIG. 9A

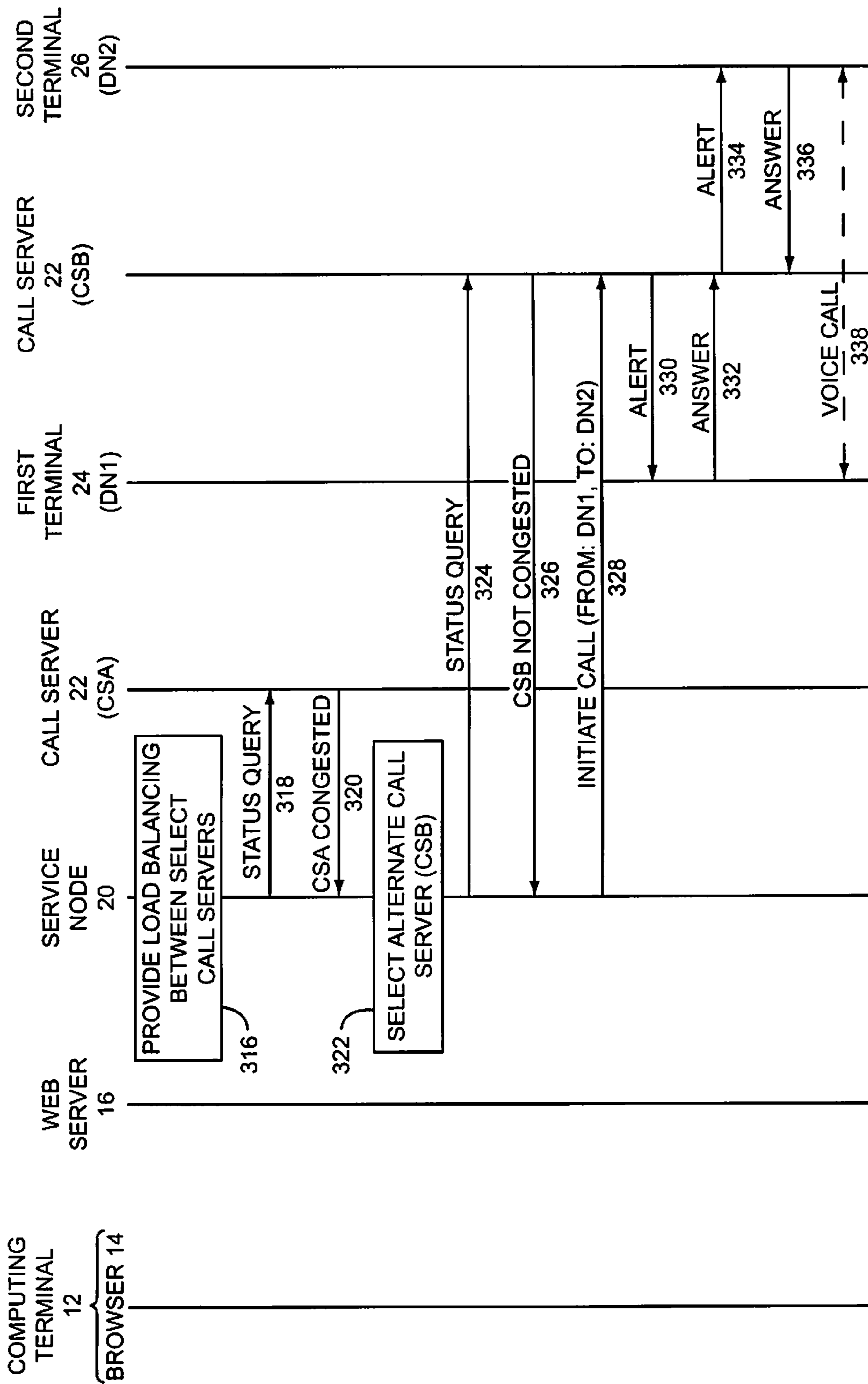


FIG. 9B

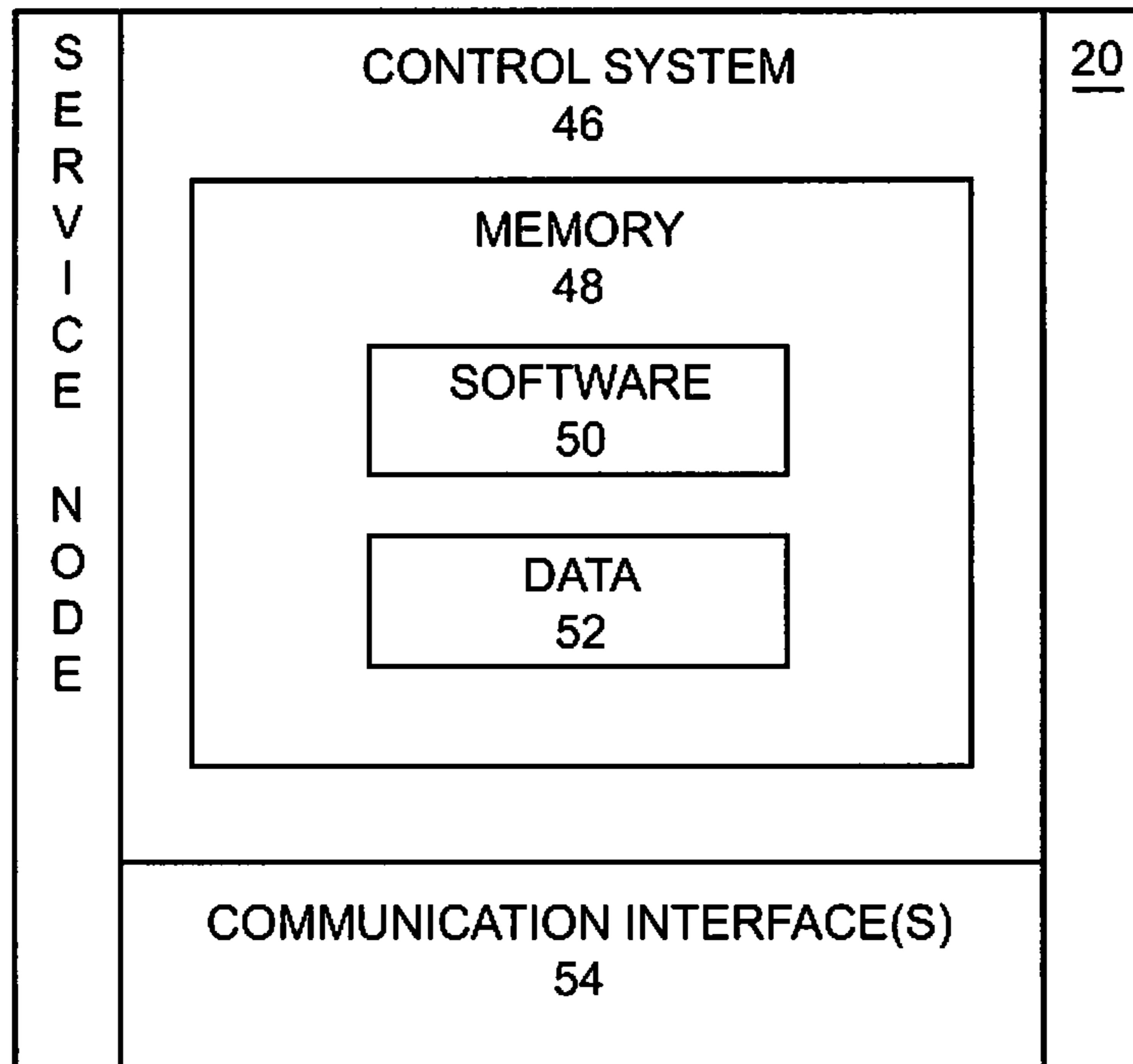


FIG. 10

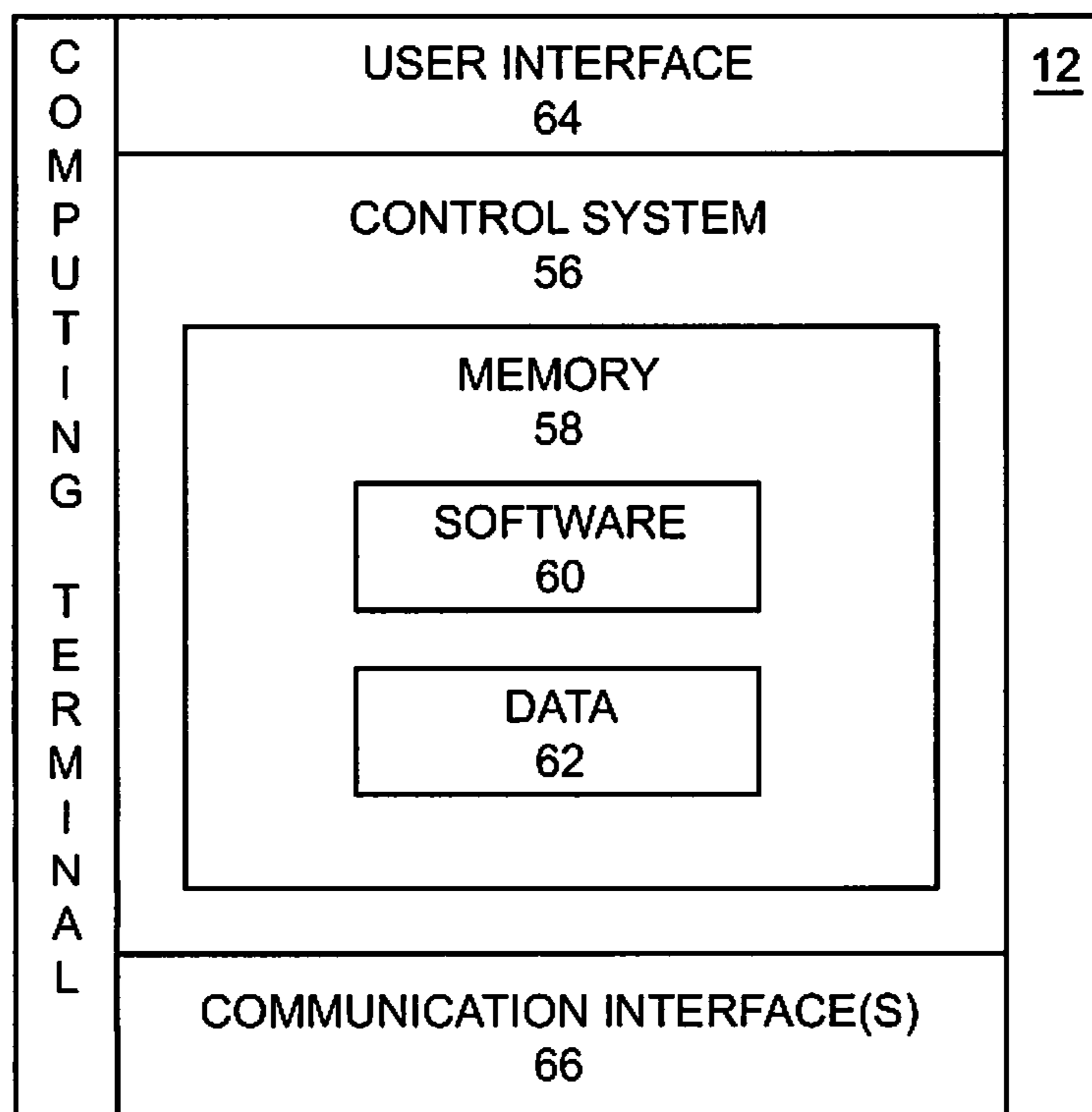


FIG. 11

1**CALL SERVER SELECTION****CROSS-REFERENCE TO RELATED APPLICATION**

The present application is a continuation of U.S. patent application Ser. No. 11/615,294, which was filed on Dec. 22, 2006, the disclosure of which is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

The present invention relates to telecommunications, and in particular to selecting a call server for telephony calls initiated in response to a click-to-call selection in electronic media or an electronic application.

BACKGROUND OF THE INVENTION

As the Internet and associated web services evolve, there is a movement to associate telephony calls with certain web applications. In click-to-call scenarios, an icon to initiate a telephony call may be provided in a web page, which is supported by a web client, such as a web browser. Upon selecting the icon, the web client may initiate the telephony call to a destination associated with the icon, wherein a voice session is automatically established. The ability to initiate telephony calls by simply clicking on an icon in a web page provides significant value to users and content providers.

The telephony call is originated by the web client, which is provided by a computing terminal. In many instances, the computing terminal is not equipped to support telephony calls, since many computing terminals are personal computers or personal digital assistants without the hardware and software necessary to support telephony calls. Even if the computing terminal is capable of supporting telephony calls via the web client, the user may wish to use another telephony terminal, such as a mobile, home, or work telephone for a telephony call to the destination associated with the icon. If another telephony terminal is desired, the user is not able to take advantage of the icon to automatically initiate the call and must take separate measures to initiate the telephony call.

Select computing terminals may support a web client as well as provide a telecommunication client for supporting telephony calls over virtually any type of network. Although the telecommunication client can support telephony calls, the web client is not able to engage the telecommunication client to initiate calls in response to selecting the icon in a click-to-call event. In essence, the telecommunication client is isolated from the web client. As such, any telephony calls initiated from the web client must be supported by the web client, not the telecommunication client.

In co-assigned U.S. patent application Ser. No. 11/316,431 filed Dec. 22, 2005, the disclosure of which is incorporated herein by reference, a computing terminal with a unique telecom control function is presented. The telecom control function is configured to receive call indicia when a call tag in a software entity, such as an application or electronic document, is selected by a user of the computing terminal. The call indicia provides information associated with a remote party with which a call is being requested by the user. The telecom control function may use the call indicia along with user indicia obtained from the user and indirectly establish a call with the remote party using a telephony terminal other than the computing terminal. If the computing terminal includes a telecommunication client capable of supporting a call, the telecom control function may instruct the telecommunication

2

client to directly initiate the call with the remote party using the call indicia. Based on user indicia or predetermined criteria, the telecom control function may select between an indirect or direct initiation of the call in a dynamic fashion, and then effect initiation of the call, either directly or indirectly. Indirect call initiation generally entails the telecom control function directly or indirectly instructing a call control entity to take the requisite steps to initiate a call between the remote party and another telephony terminal associated with the user.

Initiation of the call generally involves instructing a call server to establish the call between the two telephony terminals. In essence, the call server will route call legs to both telephony terminals and then have the legs connected when the telephony terminals are answered. The telephony connection is established between the telephony terminals as if the call were directly initiated from one telephony terminal to another.

Depending on the location of the respective telephony terminals, the service providers supporting the telephony terminals, and the types of communication services supported by the telephony terminals, only certain call servers may be available for the call. If multiple call servers are available for the call, certain call servers may be more appropriate for the call based on routing efficiency, available services, costs, and the like. Accordingly, there is a need for an efficient and effective technique to automatically select a call server for click-to-call calls.

SUMMARY OF THE INVENTION

In a click-to-call (C2C) communication environment, the present invention is employed to select an appropriate call server to use when establishing a call between two endpoints. A computing terminal provides a request to initiate a call between the two endpoints. The request is passed to a service node directly or through any number of intermediate nodes, such as a web server. The request may identify a source and a destination for the call. The service node will select a call server to use for establishing the call between the two endpoints based on the destination of the call, and send instructions to the call server to initiate the call. In response, the call server will initiate the call between the two endpoints.

The service node may identify multiple call servers that are capable of establishing the call from a group of call servers. When selecting a given call server, the service node may take steps to facilitate load balancing among the call servers as well as check the status of the call servers to ensure that the call can be handled by a particular call server. Other criteria may be used when selecting a given call server to use for the call. The destination of the call may be a general destination, which is associated with multiple specific destinations.

The service node may use the source for the call to select one of the multiple specific destinations that are associated with the general destination. The specific destination is then used to select an appropriate call server to use for the call instead of the general destination. Further, context information pertaining to a defined context associated with the call may be provided to the service node by the computing terminal. The service node may also use the context information alone or in conjunction with the source information to select a specific destination for the call.

Those skilled in the art will appreciate the scope of the present invention and realize additional aspects thereof after

reading the following detailed description of the preferred embodiments in association with the accompanying drawing figures.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

The accompanying drawing figures incorporated in and forming a part of this specification illustrate several aspects of the invention, and together with the description serve to explain the principles of the invention.

FIG. 1 is a block representation of a communication environment according to one embodiment of the present invention.

FIG. 2 illustrates a web page including a click-to-call tag displayed on a web browser.

FIG. 3 illustrates a pop-up window provided upon selecting the click-to-call tag provided in the web page illustrated in FIG. 2.

FIG. 4 illustrates an email or instant message including click-to-call tags.

FIG. 5 is a flow diagram illustrating the operation of a telecom control function according to one embodiment of the present invention.

FIG. 6 is a flow diagram illustrating the operation of a service node according to one embodiment of the present invention.

FIG. 7 is a table illustrating exemplary associations between a general destination and specific destinations.

FIG. 8 illustrates an exemplary call server selection table according to one embodiment of the present invention.

FIGS. 9A and 9B are a communication flow diagram illustrating exemplary operation of one embodiment of the present invention.

FIG. 10 is a block representation of a service node according to one embodiment of the present invention.

FIG. 11 is a block representation of a computing terminal according to one embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the invention and illustrate the best mode of practicing the invention. Upon reading the following description in light of the accompanying drawing figures, those skilled in the art will understand the concepts of the invention and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and the accompanying claims.

FIG. 1 depicts a communication environment 10 that supports click-to-call functionality according to one embodiment of the present invention. A user (User 1) is associated with a computing terminal 12, which provides a web browser 14 and optionally a telecom control function 14'. The web browser 14 provides standard browsing functionality. The telecom control function 14' cooperates with the web browser 14 and other software entities to obtain click-to-call related information. Via the web browser 14, the computing terminal 12 communicates with a web server 16 over the Internet 18 or like communication network.

To initiate a click-to-call call, the web browser 14 of the computing terminal 12 sends a request to the web server 16 to initiate a call between two or more endpoints, where one of the endpoints, like the computing terminal 12, is associated

with the user. The request will generally identify a source and a destination corresponding to the respective endpoints for the call. The request is then sent to a service node 20, which will select an appropriate call server 22 (CSA, CSB, and CSC) to use for establishing the call between the two endpoints based on the destination for the call and any other desired criteria. Once the call server 22 is selected, instructions are sent to the call server 22 to initiate the call. In response, the call server 22 will initiate the call between the two endpoints. Alternatively, the computing terminal 12 may send the request directly to the service node 20 to avoid passing the request through the web server 16.

As illustrated, the available endpoints include a first terminal 24, a second terminal 26, and a third terminal 28. The first terminal 24 is associated with User 1 and may be considered a source for the call, even though the call is not originated from the first terminal 24 in a traditional fashion. The second and third terminals 26, 28 are remote endpoints associated with a destination with which user 1 wants to communicate. The first terminal 24 is associated with directory number DN1, the second terminal 26 is associated with directory number DN2, and the third terminal 28 is associated with a uniform resource locator (URL) user3@domain.com.

As an exemplary embodiment, only the first and second terminals 24, 26 are depicted as being supported by the public switched telephone network (PSTN) 30, which may represent any type of wired or wireless network supporting circuit-switched communications. The third terminal 28 is depicted as being supported by a voice-over-packet (VoP) network 32, which could include the Internet or like packet-based network that supports packet-based communications. The PSTN 30 and the VoP network 32 are considered to include any necessary access networks as well as have the appropriate interworking infrastructure to support communications therebetween.

In many instances, only certain call servers 22 are capable of establishing a call between two endpoints. As illustrated, the PSTN 30 is supported by call servers CSA and CSB where the VoP network 32 is supported by call servers CSB and CSC. The call servers 22 may also be limited to geographic regions, service types, or the like. The service node 20 may be assigned to or otherwise associated with certain call servers 22 and select a call server 22 to use for a particular call based on the destination for the call.

The service node 20 may identify multiple call servers 22 that are capable of establishing the call from a group of call servers 22. When selecting a given call server 22, the service node 20 may take steps to facilitate load balancing among the available call servers 22 as well as check the status of the available call servers 22 to ensure that the call can be handled by a given call server 22. Other criteria may be used when selecting a given call server to use for the call. In addition to or in lieu of user or call indicia, any number of databases (DB) 34 may be accessed to obtain information helpful in selecting an appropriate call server 22. The databases 34 may take various forms and provide various types of information or services related to address translation, call server selection, destination address selection, and the like. Details related to call server selection are provided further below.

The destination provided in the request from the computing terminal 12 may be a specific destination associated with a desired endpoint or a general destination, which is associated with multiple specific destinations. A specific destination may be associated with a given company, home, user, or endpoint. A general destination may be associated with a main or central location, from which a call could be routed to another location, specific user, or endpoint. An example of a

5

general destination may be a main corporate number, which is associated with various specific locations associated with customer support, sales, human resources, and employees. These specific destinations may also be broken into geographical or contextual categories, such that different specific destinations correspond to different countries or supported languages.

Click-to-call calls are often initiated from web pages with embedded click-to-call URLs where the call indicia are used to direct the call to a general destination, which is associated with numerous specific destinations. Once the call is established with the general destination, an operator or automated attendant will direct the call to an appropriate specific destination. Prior to the present invention, there was generally no control over the call server **22** that is used to establish the call to the general destination or an ability to readily select a specific destination and bypass the general destination.

The service node **20** may use the information related to the source for the call to select one of multiple specific destinations that are associated with a general destination. The specific destination is then used to select an appropriate call server **22** to use for the call instead of the general destination. Further, context information pertaining to a defined context associated with the call may be provided to the service node **20** by the computing terminal **12**. The service node **20** may use the context information alone or in conjunction with the source information to select a specific destination for the call. Such information may be obtained or derived from the computing terminal **12** or databases **34**.

Click-to-call calls may alternatively be triggered by a user selecting a call tag in a software entity provided by the computing terminal **12**. When the call tag is selected, the call indicia associated with the call tag is provided to the telecom control function **14'**, which may control initiation of the telephony call for the communication terminal **12**. The call tag may be an icon, string, link, or any other element that is selectable by the user and associated with call indicia for establishing a call with a given destination. The call indicia may be a directory number or telephony address associated with the destination. The telecom control function **14'** may obtain user indicia from the user to assist in determining how or where the call should be initiated. Based on the call indicia and any available user indicia, the telecom control function **14'** will then take the necessary steps to send an appropriate request to initiate the call to the web server **16**, which will send a corresponding request to the service node **20**.

The software entity may be any type of electronic document, such as a web page, instant message, email, word processing document, or spreadsheet. The telecom control function **14'** may be co-resident with an application supporting the electronic document, or part of an application having a call tag. The application supporting the electronic document or a supporting operating system may be configured to recognize a request in response to selecting a call tag, and direct the request to the telecom control function **14'** for processing. Alternatively, an application may be configured to automatically direct a request or at least the call indicia to the telecom control function **14'** in response to a user selecting a call tag.

With reference to FIG. 2, a scenario is illustrated from a user perspective where a call tag is selected. In this example, a web browser interface **36** provided by the browser **14** is capable of receiving and displaying a web page **38** on the communication terminal **12**. Embedded in the web page **38** is a click-to-call tag **40**. The click-to-call tag **40** is provided in the web page **38** to allow the user to simply click or otherwise select the click-to-call tag **40** and establish a call with a remote endpoint, such as the second or third terminals **26, 28**,

6

using associated call indicia. Since many communication terminals cannot support the call or the user may desire to use the first telephony terminal **24** for the call, selecting the click-to-call tag **40** may trigger an interaction with the web server **16** and a new browser pop-up window **42** as shown in FIG. 3 to query the user for user indicia to assist in establishing the call with the remote endpoint.

The pop-up window **42** may identify the remote endpoint by name or by telephony address in a general or specific fashion. In this example, the remote endpoint represents a general network address (globalcallcenter@xyz.com) or directory number (1 800 XYZ CORP) for a global call center. The type of communication address may correspond to a directory number, a Session Initiation Protocol (SIP) address, a peer-to-peer address, or a uniform resource locator (URL). The second and third terminals **26, 28** may be associated with the global call center and may represent specific endpoints associated with the general, remote endpoint.

The pop-up window **42** may also allow the user to select a direct or indirect method for establishing the call, and if indirect, another endpoint to use for the call. As illustrated, the user is provided with a choice to initiate the call from an associated mobile terminal associated with directory number DN0; the first terminal (office) **24** associated with directory number DN1; a PC associated with address user1@isp.com; or the computing terminal **12**. Assume that the first terminal **24** is selected to use for the call, as indicated by the highlighting. Selecting the mobile, office, or PC terminals would result in an indirect establishment of a call from the selected endpoint to the remote endpoint, whereas selection of the computing terminal **12** would result in a direct initiation of a call from the computing terminal **12** using an integrated telecom client (not illustrated).

The pop-up window **42** is configured to allow the user to readily provide any user indicia to assist with initiating the call. The user indicia may take various forms including source information and context information. The source information corresponds to the particular endpoint of the user to use when establishing the call, while the context information provides information bearing on a context associated with the call. The context information may vary significantly from one application to another. As illustrated, the context information may identify a preferred language to associate with the call, whether the call is private, and the type of call being established. The type of call may identify the call as a personal, business, commercial, support call, or the like. When the user selects "OK," any appropriate source, destination, and context information is sent to the web server **16** in association with a request to initiate a call.

An example of providing click-to-call tags **40** in an email or instant message **44** is illustrated in FIG. 4, wherein selecting "Tom@example.com" or "+1 555 765 4321" results in an alert with associated call indicia being provided to the telecom control function **14'** to initiate a call to Tom Sawyer by either the computing terminal **12** or an endpoint, such as the first terminal **24**. Although an email or instant message **44** is illustrated, the click-to-call tags **40** may be provided in any type of software entity, such as a web page, email, instant message, or word processing, spreadsheet, or presentation document.

With reference to FIG. 5, a flow diagram is provided to illustrate operation of the telecom control function **14'** according to one embodiment of the present invention. The process begins (step **100**) wherein the telecom control function **14'** detects the presence or activation of a software entity having a call tag (step **102**). The telecom control function **14'** will then detect when the call tag associated with the software

entity is selected (step 104). The call indicia associated with the call tag is accessed (step 106), and if desired, a pop-up window 42 or like message is provided to the user via the computing terminal 12 (step 108). The pop-up window 42 provides a vehicle for receiving user indicia associated with selecting the call tag. Other vehicles are available, such as other software applications. The telecom control function will receive any user indicia in an automatic fashion, if pre-defined rules are established, or through an appropriate user response (step 110).

The telecom control function 14' may then send a request with any necessary call indicia and user indicia, including source, destination, and context information to the web server 16 for delivery to the service node 20 or directly to the service node 20 (step 112). The service node 20 may then initiate establishment of a call between one of the user's endpoints associated with the source information and a remote endpoint associated with the destination information based on the call indicia in light of any pertinent user indicia. For indirect call initiation, the computing terminal 12 is generally not involved in the call once the call is established. For direct call initiation, the computing terminal 12 will originate the call to the remote endpoint.

Turning now to FIG. 6, a flow diagram is provided to illustrate operation of the service node 20 according to one embodiment of the present invention. Initially, the service node 20 will receive instructions from the web server 16 or directly from the computing terminal 12 to initiate a call from a source to a destination (step 200). In this example, assume the source information identifies the source address for the first terminal 24, which is associated with User 1. The source address is a directory number DN1. Further assume that the destination is a general destination that includes a general destination address, which is associated with any number of specific destinations, including specific destination addresses.

Based on the source address and any context information for the call, the service node 20 will determine a specific destination address to use for the call from the multiple specific destination addresses associated with the general destination address (step 202). This determination may be based on all or a portion of the source address, or any source related information. The context information may be derived from any source or destination information provided in the request, specific context information provided in the request, or information obtained from one of the databases 34. Once the actual destination address to use for establishing the call is determined, the service node 20 will determine an appropriate call server 22 to use for the call based on the specific destination address (step 204). Notably, if the instructions received from the computing terminal 12 identify the actual address to use when establishing the call, the service node 20 will use this address or related information to select the call server 22 to use for the call. The present invention selects an appropriate call server 22 based on the actual destination that will be used for the call. The actual destination may be determined by the service node 20 based on destination information provided from the computing terminal 12, or the actual destination may be the destination provided in the request from the computing terminal 12. Regardless of whether the actual destination for the call is provided by the computing terminal 12 or determined by the service node 20, the selection of the call server 22 to use for the call is preferably selected based on the actual destination used for the call.

If multiple call servers 22 are capable of establishing the call, the service node 20 may take the requisite steps to balance the load among these available call servers 22 (step

206). Load balancing may entail tracking the actual loads of the call servers 22 and selecting a single call server 22 from a group of available call servers 22 to maintain balanced loading among the call servers 22. Other criteria may be used to select one of a number of available call servers 22 to use for the call. Further, once a call server 22 is selected for the call, the service node 20 may confirm the status of the selected call server or servers 22 to ensure that the call server 22 is currently operable and capable of establishing the call (step 208). Once a single call server 22 has been selected to establish the call, the service node 20 will instruct the selected call server 22 to initiate the call from the source address to the specific destination address (step 210). As a result, the call is established between the endpoint associated with the source address and the endpoint associated with the specific destination address. Again, the service node 20 need not identify a specific destination address, and may use the destination address provided in the original request. As such, the endpoint associated with the actual destination address is the endpoint with which the call is established.

As indicated above, the service node 20 is capable of selecting from a number of specific destinations based on a general destination, which was provided in the request to the service node 20 from the computing terminal 12. Turning now to FIG. 7, a table is provided for a particular general destination, which is associated with a number of specific destinations, and in particular is associated with a number of specific destination addresses. A general destination is associated with the domain xyz.com or a corresponding directory number 800-XYZ-CORP. For the general destination, the table identifies a number of specific destination addresses corresponding to both source and context information. In operation, for any request to initiate a call toward the general destination xyz.com or 800-xyz-corp, the specific destination address to use for establishing the call is based on a prefix or a source address provided in the source information, and perhaps context information associated with the call.

For example, if the country prefix for the source address is +1, the specific destination address +1(416) 583-7382 is selected if the context information indicates that English is preferred for the call. The specific destination address +1(514) 373-2891 is selected if French is desired for the call. For source prefixes from +2 to +32, the specific destination address +44 09 12 22 42 84 is selected. For source prefix +33, the specific destination address +33 05 12 23 42 23 is selected. The only exception is when the source prefix is +23, and the context information is indicative of a reservation request. In that case, the specific destination address of +23 39 39 40 38 10 is selected. If the source information includes a SIP (Session Initiation Protocol) address, the specific destination address used is callcenter@xyz.com. From the above, when multiple specific destinations are available for a requested general destination, the service node 20 may use the source information, the context information, or a combination thereof to select the specific destination to use when establishing the call. The instructions sent to the selected call server 22 will identify the specific destination as the destination to which the call must be established.

With reference to FIG. 8, a call server selection table is illustrated according to one embodiment of the present invention. The call server selection table may be obtained from one of the databases 34 in response to receiving a request to initiate a call from the service node 20. The call server selection table may define one or more call servers that are capable of being used for different destinations. In the illustrated example, destination information, which identifies the prefix for a particular destination address, is associated with one or

more call servers **22**, CSA, CSB, CSC, . . . CSZ. In particular, any destination addresses having the prefix (area code) +1(416) are capable of being established by call servers CSA and CSC. Similarly, calls intended for a destination address having a prefix of +1(514) or +33 are capable of being established by call server CSB. Destination addresses having the prefix +44 are capable of being supported by call server CSC, whereas calls intended for a SIP address are supported by call server CSZ. Accordingly, any or all of the destination information, including destination addresses, used by the call server **22** to establish the call may be used to select one or more available call servers **22** that are capable of establishing the call. Various criteria including load balancing, current status, service provider preferences, user preferences, or the like, may be used to assist in selecting a particular call server **22** to use when multiple call servers **22** are serving a particular destination.

Turning now to FIGS. **9A** and **9B**, a communication flow is provided to illustrate exemplary operation of one embodiment of the present invention. Initially, the browser **14** may send to the web server **16** a hypertext transfer protocol (HTTP) Get message to obtain the content associated with the URL associated with a click-to-call web page (step **300**). Based on the URL, the web server **16** will send a 200 OK message back to the browser **14** with the requested click-to-call web page content (step **302**). Assuming the click-to-call web page has a call tag that is selected by the user and the computing terminal **12** obtains any necessary user information, the browser **14** may send a message back to the web server **16** to execute a click-to-call function (step **304**). The message may include source information having the directory number DN1 as the source address, which is associated with the first terminal **24**. The message sent to the web server **16** may also identify a specific or general destination for the call as well as any context information. In this case, a general destination is provided and is represented by globalcallcenter@xyz.com. The context information indicates that an English-speaking representative is requested. The web server **16** will recognize that a click-to-call call has been requested and will send an Initiate Call message to the service node **20** (step **306**). The Initiate Call message will indicate that the call should be from a source address (DN1) to a general destination (globalcallcenter@xyz.com). The Initiate Call message may also provide the context information, which in this case indicates that the call can be sent to a destination where English is spoken.

Upon receiving the Initiate Call request, the service node **20** may retrieve a destination selection table for the general destination, perhaps from a database **34** (step **308**). The service node **20** will then select a specific destination address based on the source address, and perhaps based on any available context information (step **310**). Based on the specific destination address, the service node **20** will select an appropriate call server **22** to use for establishing the call (step **314**). If multiple call servers **22** are selected based on the specific destination address, a particular one of the call servers **22** may be selected based on taking steps to facilitate load balancing among the selected call servers **22**. Assuming the call server CSA is selected, the service node **20** may send a status query to call server CSA (step **318**), which may respond with an indication that it is congested (step **320**). Based on this response, the service node **20** may select an alternate call server CSB (step **322**).

The service node **20** may then send a status query to call server CSB (step **324**). Assuming call server CSB is not congested and is available to establish a call, a message is sent back to the service node **20** indicating that call server CSB is

not congested (step **326**). The service node **20** may then send instructions to call server CSB to initiate a call from the source address DN1 to the specific destination address DN2 (step **328**). The call server CSB will then take the necessary steps to interact directly or indirectly with the first terminal **24** and the second terminal **26** to effectively establish a voice call therebetween. This functionality is represented by sending an Alert to the first terminal **24** (step **330**) and receiving an Answer message back from the first terminal **24** when User **1** answers the first terminal **24** (step **332**). Similarly, the call server CSB will send an Alert toward the second terminal **26** (step **334**) and will receive an Answer message back when the second terminal **26** is answered by the remote party (step **336**). The requisite processing is provided to establish a bearer path between the two terminals **24**, **26** and a voice call is established (step **338**).

With reference to FIG. **10**, an exemplary service node **20** is illustrated. The service node **20** may include a control system **46** with sufficient memory **48** for the requisite software **50** and data **52** to operate as described above. One or more communication interfaces **54** may be provided to facilitate communication with various entities, including the computing terminal **12**, web server **16**, databases **34**, call servers **22**, and the like.

With reference to FIG. **11**, an exemplary computing terminal **12** is illustrated. The communication terminal **12** may include a control system **56** with sufficient memory **58** for the requisite software **60** and data **62** to operate as described above. The software **60** may support various applications supporting various electronic documents, wherein certain of the applications or electronic documents may represent a software entity. The software **60** may also support all or a portion of the telecom control function **14'** as well as the web browser **14**, which may also be a software entity. The various applications may run on an appropriate operating system, which may be configured to support all or a part of the telecom control function **14'** and web browser **14**. The control system **56** may also be associated with an appropriate user interface **64** as well as any number of communication interfaces **66**, to facilitate communications with any variety of networks, including the Internet **18**, VoP network **32**, and the PSTN **30**.

Those skilled in the art will recognize improvements and modifications to the preferred embodiments of the present invention. All such improvements and modifications are considered within the scope of the concepts disclosed herein and the claims that follow.

What is claimed is:

1. A method of establishing a communication session, comprising:
 - receiving, from a computing terminal displaying a call tag, a web-based request to establish a click-to-call communication session between a user and a remote party;
 - receiving, from the computing terminal, indicia identifying an address of a telephony terminal associated with the user and a general destination address associated with the remote party, and a context of the click-to-call communication session; wherein the computing terminal is separate from the telephony terminal associated with the user and the general destination address associated with the remote party;
 - selecting, by a service node, from a plurality of destination addresses of a destination endpoints, a specific destination address of a specific destination endpoint associated with the general destination address; wherein the specific destination endpoint is selected based on the address of the telephony terminal associated with the

11

user, the general destination address, and the context information that identifies a defined context for the click-to-call communication session; wherein the context information comprises a preferred language and one of a type of communication session, a location of the telephony terminal associated with the user, and a service provider supporting the telephony terminal associated with the user;

5 selecting, using the service node, a call server based on the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint;

10 wherein the call server selection comprises:

- selecting a first call server;
- obtaining a status of the first call server; and
- 15 determining whether to use the first call server as the selected call server based on the status of the first call server; and

20 sending, to the selected call server, instructions to establish the click-to-call communication session between the telephony terminal of the user and the specific destination endpoint, the instructions providing the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint.

25 **2.** The method of claim 1, wherein the call tag comprises at least one of an icon, a string, and a URL link.

3. The method of claim 1, further comprising receiving, via a web interface on the computing device, the indicia identifying the address of the telephony terminal associated with the user and the general destination address associated with the remote party.

4. The method of claim 1, wherein selecting the call server comprises selecting the call server from a plurality of call servers.

5. The method of claim 1, wherein selecting the call server comprises selecting the call server from a plurality of call servers based on a respective load on each call server.

6. The method of claim 1, wherein the request to establish the communication session is received from the computing terminal through a web server.

7. The method of claim 1, wherein the general destination address comprises one of a directory number, a Session Initiation Protocol (SIP) address, a peer-to-peer address, and a uniform resource locator (URL).

8. The method of claim 1, wherein the specific destination address comprises one of a directory number and a uniform resource locator (URL).

9. An apparatus for establishing a communication session comprising:

- at least one communication interface; and
- a control system associated with the at least one communication interface, the control system configured to:
 - receive, from a computing terminal displaying a call tag, a web-based request to establish a click-to-call communication session between a user and a remote party;
 - receive, from the computing terminal, indicia identifying an address of a telephony terminal associated with the user and a general destination address associated with the remote party, and a context of the click-to-call communication session, wherein the computing terminal is separate from the telephony terminal associated with the user and the general destination address associated with the remote party;
 - 60 select, from a plurality of destination addresses of a destination endpoints, a specific destination address

12

of a specific destination endpoint associated with the general destination address; wherein the specific destination endpoint is selected based on the address of the telephony terminal associated with the user, the general destination address, and the context information that identifies a defined context for the click-to-call communication session; wherein the context information comprises a preferred language and one of a type of communication session, a location of the telephony terminal associated with the user, and a service provider supporting the telephony terminal associated with the user;

select a call server based on the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint;

wherein the call server selection comprises:

- selecting a first call server;
- obtaining a status of the first call server; and
- 20 determining whether to use the first call server as the selected call

server based on the status of the first call server; and

send, to the selected call server, instructions to establish the click-to-call communication session between the telephony terminal of the user and the specific destination endpoint, the instructions providing the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint.

10. The apparatus of claim 9, wherein the call tag comprises at least one of an icon, a string, and a URL link.

11. The apparatus of claim 9, wherein the control system is further configured to receive, via a web interface on the computing device, the indicia identifying the address of the telephony terminal associated with the user and the general destination address associated with the remote party.

12. The apparatus of claim 9, wherein the control system is further configured to select the call server from a plurality of call servers.

13. The apparatus of claim 9, wherein the control system is further configured to select the call server from a plurality of call servers based on a respective load on each call server.

14. The apparatus of claim 9, wherein the general destination address comprises one of a directory number, a Session Initiation Protocol (SIP) address, a peer-to-peer address, and a uniform resource locator (URL).

15. The apparatus of claim 9, wherein the specific destination address comprises one of a directory number and a uniform resource locator (URL).

16. A computer program product for establishing a communication session, the computer program product stored in a non-transitory computer-readable storage medium and including instructions configured to cause a processor to carry out the steps of:

- receiving, from a computing terminal displaying a call tag, a web-based request to establish a click-to-call communication session between a user and a remote party;
- receiving, from the computing terminal, indicia identifying an address of a telephony terminal associated with the user and a general destination address associated with the remote party, and a context of the click-to-call communication session; wherein the computing terminal is separate from the telephony terminal associated with the user and the general destination address associated with the remote party;
- 65 selecting, by a service node, from a plurality of destination addresses of a destination endpoints, a specific destination address of a specific destination endpoint associated

13

with the general destination address; wherein the specific destination endpoint is selected based on the address of the telephony terminal associated with the user, the general destination address, and the context information that identifies a defined context for the click-to-call communication session; wherein the context information comprises a preferred language and one of a type of communication session, a location of the telephony terminal associated with the user, and a service provider supporting the telephony terminal associated with the user;

selecting, using the service node, a call server based on the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint;

wherein the call server selection comprises:

- selecting a first call server;
- obtaining a status of the first call server; and
- determining whether to use the first call server as the selected call server based on the status of the first call server; and

sending, to the selected call server, instructions to establish the click-to-call communication session between the telephony terminal of the user and the specific destination endpoint, the instructions providing the address of the telephony terminal associated with the user and the specific destination address of the specific destination endpoint.

14

17. The computer program product of claim **16**, wherein the call tag comprises at least one of an icon, a string, and a URL link.

18. The computer program product of claim **16**, wherein the instructions are further configured to cause the processor to carry out the step of receiving, via a web interface on the computing device, the indicia identifying the address of the telephony terminal associated with the user and the general destination address associated with the remote party.

19. The computer program product of claim **16**, wherein the instructions are further configured to cause the processor to carry out the step of selecting the call server from a plurality of call servers.

20. The computer program product of claim **16**, wherein the instructions are further configured to cause the processor to carry out the step of selecting the call server from a plurality of call servers based on a respective load on each call server.

21. The computer program product of claim **16**, wherein the general destination address comprises one of a directory number, a Session Initiation Protocol (SIP) address, a peer-to-peer address, and a uniform resource locator (URL).

22. The computer program product of claim **16**, wherein the specific destination address comprises one of a directory number and a uniform resource locator (URL).

* * * * *